

PATENT CLAIMS

1. Process for producing a plastics article from a plastic obtainable via free-radical polymerization with
5 inorganic coating on one or more sides via the following process steps:

- 10 a) using doctoring, flow coating, or immersion to coat a substrate with a lacquer composition in which a silicon-based adhesion promoter and inorganic particles are present in a ratio of from 1:9 to 9:1 in a solvent which, where appropriate, may also comprise flow control agent,
- 15 b) drying the lacquer composition on the substrate, thus obtaining the coated substrate,
- c) using one or more substrates thus coated to construct a polymerization cell, where the coated sides are in the interior of the cell,
- 20 d) charging a polymerizable liquid composed of monomers capable of free-radical polymerization, where appropriate with polymeric content, to the polymerization cell,
- e) free-radical polymerization of the polymerizable liquid in the presence of a polymerization
25 initiator, whereupon the internal inorganic coating transfers from the substrate into or onto the surfaces of the free-radical-polymerized plastic or of the plastics article, and
- 30 f) removing the coated plastics article with inorganic coating on one or more sides from the polymerization cell.

2. Process according to Claim 1, characterized in that the plastics article has the shape of a flat
35 sheet.

3. Process according to Claim 1 or 2, characterized in that the plastic obtainable via free-radical

polymerization is a polymethyl methacrylate or a polystyrene.

4. Process according to one or more of Claims 1 to 3,
5 characterized in that the adhesion promoter is composed of a colloidal solution of SiO_2 particles or of silane condensates.

5. Process according to one or more of Claims 1 to 4,
10 characterized in that the lacquer composition comprises from 1 to 2% by weight of SiO_2 particles and from 2.5 to 7.5% by weight of antimony tin oxide particles in water as solvent.

15 6. Process according to Claim 5, characterized in that the lacquer composition also comprises a surfactant or a mixture of surfactants as flow control agent.

20 7. Process according to one or more of Claims 1 to 6, characterized in that the substrate be coated is a glass sheet, a plastics sheet, or a plastics film.

8. Process according to Claim 7, characterized in
25 that the plastics sheet or a plastics film is composed of polyethylene terephthalate.

9. Process according to one or more of Claims 1 to 8,
30 characterized in that the substrate is dried with the lacquer composition at a temperature in the range from 80 to 120°C.

10. Process according to one or more of Claims 1 to 9,
35 characterized in that the polymerizable liquid is polymerized at from 40 to 80°C.

11. Process according to one or more of Claims 1 to 10, characterized in that use is made of a polymerization cell in essence consisting of two sheets

with peripheral sealing bead.

12. Process according to one or more of Claims 1 to 11, characterized in that a sheet of polymethyl methacrylate plastic is produced with an electrically
5 conductive coating on one or two sides.

13. Plastics articles obtainable by a process according to one or more of Claims 1 to 12.

10 14. Plastics article according to Claim 13, characterized in that it has an electrically conductive coating with a surface resistance smaller than or equal to $10^{10} \Omega$.

15 15. Plastics article according to Claim 12 or 13, characterized in that the layer thickness of the electrically conductive coating is in the range from 200 to 5000 nm.

20 16. Plastic according to one or more of Claims 12 to 15, characterized in that the scrub resistance of the inorganically coated surface to DIN 53 778 is at least 10 000 cycles.

25 17. Use of the plastics article according to one or more of Claims 11 to 16 for encasing structures, for equipping cleanrooms, for machine covers, for incubators, for displays, for visual display screens and visual-display-screen covers, for rear-projection
30 screens, for medical apparatus, or for electrical devices.